REMARKS

Claims 1-24 are pending in this application. Claims 1 and 21 have been amended to, among other things, further clarify the concepts of the present invention. It is submitted that no new matter has been added. Entry of these amendments is requested.

More particularly, independent claim 1 has been amended to more clearly define the feature that the substrate/buffer layer interface functions as a current path by specifying the lower electrode provided on the bottom surface of the substrate. Independent claim 21 has been amended to more clearly define the feature of reducing the interface resistance between the SiC substrate and the AlGaN buffer layer. It is submitted that these features, among others, are not taught or suggested by the previously cited patents to Edmond and Nakamura whether taken singly or in combination.

A marked-up version showing the changes made by the present amendment is attached hereto as "Version with Markings to Show Changes Made".

In the event that any fees are due in connection with this paper, please charge our Deposit Account No. 01-2340.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

1. (Amended) An optical semiconductor device, comprising:

a substrate of SiC having a first conductivity type;

a buffer layer of AlGaN formed on said substrate epitaxially, said buffer layer having said first conductivity type and a composition represented by a compositional parameter x as $Al_xGa_{1-x}N$;

a first cladding layer having said first conductivity type, said first cladding layer being formed on said buffer layer epitaxially;

an active layer formed epitaxially on said first cladding layer;

a second cladding layer having a second, opposite conductivity type, said second cladding layer being formed on said active layer epitaxially;

a first electrode provided so as to inject first-type carriers having a first polarity into said second cladding layer; and

a second electrode provided on a bottom surface of said substrate so as to inject second-type carriers having a second polarity,

said buffer layer containing said first type carriers with a concentration level in the range from $3 \times 10^{18}cm^{-3}$ to $1 \times 10^{20}cm^{-3}$ and said compositional parameter x larger than 0 but smaller than 0.4 ($0 < x < 0.4$) so as to reduce an interface resistance between said substrate and said buffer layer.

21. (Amended) A semiconductor wafer, comprising:

an SiC substrate having an n-type conductivity; and

an AlGaN layer having an n-type conductivity formed on said SiC substrate with a composition represented as $AlGa_{1-x}N$,

wherein said AlGaN layer has a carrier density in the range between 3×10^{18} - $1 \times 10^{20}cm^{-3}$, and

wherein said composition parameter x is larger than 0 but smaller than 0.4 ($0 < x < 0.4$) so as to reduce an interface resistance between said SiC substrate and said AlGaN layer.